

REMARKS

Claims 1-33 are now pending in the application. The following remarks are believed to be fully responsive to the outstanding Office Action and are believed to place the application in condition for allowance. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 1, 3, 8, 9, 14, and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa et al. (U.S. Pat. No. 4,506,518) in view of Nagatomo et al. (U.S. Pat. No. 4,494,383).

Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa in view of Nagatomo and further in view of Alsenz (U.S. Pat. No. 5,035,119).

Claim 13 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa in view of Nagatomo and further in view of Takizawa et al. (U.S. Pat. No. 4,962,648).

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa in view of Nagatomo and further in view of Tanaka (U.S. Pat. No. 4,634,046).

Claims 2 and 4-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa in view of Nagatomo and further in view of Bendtsen (U.S. Pat. No. 5,396,780).

Claims 17-19, 22-23, 25, 27-28, and 31-33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa in view of Nagatomo and further in view of Schaeffer et al. (U.S. Pat. No. 5,440,894).

Claims 20-21, 26, and 29-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa in view of Nagatomo and Schaefer, and further in view of Bendtsen.

Claim 24 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa in view of Nagatomo and Schaefer, and further in view of Tanaka. These rejections are respectfully traversed.

Independent Claim 1 calls for a control system for a cooling system having a controller that produces a variable duty cycle control signal in response to a system property. The controller causes a compressor and a valve to vary a cooling capacity of the cooling system in response to the variable duty cycle control signal. Similarly, independent Claim 17 calls for a cooling system having a controller responsive to a first sensor and providing a variable duty cycle control signal. The variable duty cycle control signal modulates compressor capacity and a valve to a valve position, thereby adjusting an operating capacity of the cooling system based on its thermal load.

In this manner, the control system of the present invention teaches adjusting a cooling capacity of a refrigeration system through use of a controller that produces a variable duty cycle control signal in response to a system property. See Specification at pg. 33, Paragraph [00108]. The signal is used to modulate a compressor capacity and also to modulate a valve position to thereby tailor the cooling capacity of the refrigeration system to an optimum level based on measured system load. See

Specification at pg. 5, Paragraph [0016] and pg. 7, Paragraph [0020]. Yoshikawa and Nagatomo fail to teach or suggest such a relationship either in combination or alone.

Yoshikawa fails to teach or suggest using a variable duty cycle control signal to control the cooling capacity of a refrigeration system based on a sensed system parameter. Nagatomo teaches using a variable duty cycle control signal to selectively modulate a switch valve (9) and thereby permit a desired amount of refrigerant to enter a compressor in an effort to regulate a cooling capacity of an automotive air conditioning system. See Nagatomo at Col. 3, Ins. 20-42 and Figure 5.

The switch valve regulates an amount of refrigerant that enters the compressor and therefore regulates the cooling capacity of the system. See Nagatomo at Col. 3, Ins. 53-68 and Col. 4, Ins. 1-10. However, Nagatomo fails to teach *both* modulation of a compressor *and* modulation of a valve. Rather, Nagatomo teaches regulation of a switch to thereby regulate compressor capacity. Therefore, Applicant respectfully submits that Yoshikawa and Nagatomo fail to teach each and every element of the present invention either in combination or alone.

Because Nagatomo does not teach a controller that produces a variable duty cycle control signal to modulate a compressor *and* a valve to thereby tailor a cooling capacity of a refrigeration system based on a detected system load, and none of the cited references cures this deficiency on Nagatomo, Applicant's invention is not taught or suggested by the prior art and reconsideration and withdrawal of the rejection is respectfully requested.

In this manner, it is believed that independent Claims 1 and 17, as well as Claims 2-16 and 18-33, respectively dependent therefrom, are in a condition for allowance in

light of the art of record. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection.

DOUBLE PATENTING

Claims 1, 13-18, 22, stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-15 of U.S. Patent No. 6,408,635. This rejection is respectfully traversed.

Applicant attaches herewith a terminal disclaimer in compliance with 37 C.F.R. § 1.321(c). Accordingly, Applicant respectfully requests reconsideration and withdrawal of the double patenting rejection.

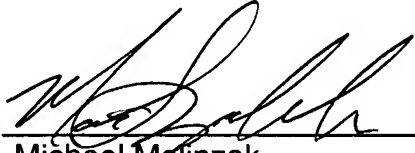
CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the

Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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